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10/540,574

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Takeshi Kato

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EXAMINER

VIJAYAKUMAR, KALLAMBELLA M

ART UNIT

PAPER NUMBER

1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,574	Applicant(s) KATO ET AL.	
	Examiner KALLAMBELLA VIJAYAKUMAR	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>08/28/2009;11/12/2009;01/07/2010</u> | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

- Applicant's supplemental amendment filed with the arguments on 11/12/2009, and the arguments filed 08/28/2009 have been entered and fully considered.
- Claims 1, 4, 11, 15, and 19 were amended. New Claims 21-22 were added. Claims 1-22 as amended are currently pending with the application.
- The examiner has considered the IDS filed 8/28/2009, 11/12/2009 and 01/07/2010 have been considered.

Claim Rejections under 35 USC 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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1. Claims 1-22 are rejected under 35 U.S.C. 103(a) as obvious over Li et al (US 6,555,503).

Li et al teach a multifilamentary tape comprising a BSCCO-2223 oxide superconductor with a density of $\geq 90\%$ theoretical that will encompass a range of 90% to 100% theoretical density. The product was free of void and pores i.e. fully dense (Abstract, Cl -9, Ln 64- to Cl-10, Ln-8; Cl-6, Ln 10-17; Cl-3, Ln 38-54; Whole article). The tape meets the limitation of device/wire in the claims. The instant claim limitation requires the oxide phase to have specific theoretical density.

Ref to method steps, the tape containing BSCCO-2223 oxide was made by filling a silver tube with precursor powder containing tetragonal BSCCO-0011 and BSCCO-2212, drawing the P-I-T into a wire with a precursor tape having about 90% density and 0.9 f-factor, and heat treating the precursor tape forming the superconductor tape by the complete conversion of the precursor. The precursor tapes were placed inside a furnace, pressurized with gas containing O₂ to a desired level, and heated at a ramp rate of 10°C/min to the desired reaction temperature (Cl 14, Ex-1). The prior art further teaches making the superconductor wire by filling silver tube with precursor and subject it to high degree of reduction in a single step, and sintering in a desired pressure of O₂ containing gas by HIPing at a pressure of 2.5-25 MPa (Cl-19, Ln 34-39; Cl 21-22, Ex-1; Cl-5, Ln 9-13; Cl-5, Ln 9-13; Cl-3, Ln 19-37). The prior art teaches achieving desired oxygen pressures in the reaction chamber (ex 10 MPa; Cl-11, Ln 18-20) and controlling the pressure in a flow through HIP process (Cl-12, Ln 54 to Cl-13, Ln 8; whole article), wherein HIP can be conducted between 1-250 MPa and preferably between 2.5-25 MPa. The prior art further teaches a first and second rolling steps with deformation and subsequent heat treatments (Cl-9, Ln 19-36; Cl-12, Ln 17-31). The prior art also teaches that one or more annealing deformations can be performed to induce texturing. The precursors include raw material mixture or an oxide intermediate to be converted to the superconductor (Cl-4, Ln 13-48).

The prior art is silent about the sintered density of the sintered wires to be at least 93% per the claims 1, 4 and 11, and fails to teach the reduction in thickness upon heat treating per the claims.

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Ref claims 1, 4 and 11, the prior art teaches a density of greater than 90% that would touch or overlap or lie close to the instant claimed range of at least 93%, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art", or where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties, a prima facie case of obviousness exists. <MPEP 2144.05 [R-5]-I>.

Furthermore, it would have been obvious to a person of ordinary skilled in the art to perform one or more annealing deformations on the HIPed tape of Li to benefit from improved texturing and performance with reasonable expectation of success because the prior art is suggestive of it; that would obviously result in the reduction of thickness under deformation of the tape. The additional step of annealing deformation in claim-11 is not precluded by the limitation of comprising in the claims.

Ref to Pressure in claims 1, 4, 11, 15 and 19, the prior art pressure lies inside the instant claimed range and prima facie obvious.

Ref to process limitations in claims 1 and 4, the prior art product will be similar to that produced by the process step claimed by the applicants and When the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process limitation although produced by a different process, the claim is not patentable. See also MPEP §2113.

Ref to claims 2-3, 5-6 and 12-13, the prior art teaches making an article with a density of >90% that would encompass a range of 90-100%, and teaches all the elements of making the tape, and it would have been obvious to a person of ordinary skilled in the art the optimize the process conditions by routine experimentation over the teachings of the prior art to attain desired density, and "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

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Ref to claims 7-10, the prior art teaches sintering the BSCCO precursor filled silver tube, and, and process limitations cannot serve to impart patentability to structures. In re Dike, 157 USPQ 581, 585 (CCPA 1968).

Ref to claims 14 and 17, the prior art teaches annealing deformation of the tube whereby the reduction in the thickness of the tube will be obvious that could be optimized by a person of ordinary skilled in the art by routine experimentation, and "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Ref to the claims 16, 18 and 20-22, the prior art composition, method of making the composition, the components processed therein are similar to that taught by the applicants, and they will possess similar characteristics/properties. Furthermore, ref to claims 21-22, the prior art teaches a precursor of a mixture of components or an intermediate oxide for conversion to superconducting phase.

2. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being obvious over Kobayashi et al (WO 2003-100795 as evidenced by US 2004-0237294).

Kobayashi et al teach a method of making a superconducting wire by covering the raw material powder of an oxide superconductor/Bi2223 with a metal, and heat treating the wire in a pressurized atmosphere wherein the total pressure of the pressurized vessel is at least 1 MPa and less than 50 MPa <Claims 1, 4, 7-11, 15, and 19>, and the tapes exhibited a reduction in the thickness upon pressurized heating <Claims 1, 4, 11> [Abstract; Fig-9A-9B; 12; 0017, 0077, 0084-85, 0129, 0164]. The filling factor of the tube was about 80% theoretical density [0096]. The prior art also teaches heat treating at 20 MPa and 825C for 25 hrs [0110].

The prior art is silent about the density of the resultant product per the claims 1-3, 4-6 and 11-13.

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Ref to claims 1-6 and 11-13 and 16-18 and 20-22, the prior art wire, components processed, and method of making the wire are either same or substantially same as that claimed by the applicants, and Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. <MPEP 2112.01[R3]-I>. Further, Ref to process limitations in claims 1 and 4, the prior art product is similar to that produced by the process step claimed by the applicants, and When the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See also MPEP §2113. Ref to Pressure in claims 1, 4, 11, 15 and 19, the prior art pressure lies inside/overlaps with the instant claimed range and prima facie obvious.

Ref to claims 7-10, the prior art teaches sintering the BSCCO precursor filled silver tube.

Ref Claims 14 and 17, the prior art change in the thickness of the tape overlaps with instant claimed ranges and prima facie obvious.

3. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being obvious over Kobayashi et al (US 2002/0022576) in view of Kobayshi et al (WO 2003-100795 as evidenced by US 2004-0237294).

Kobayashi et al teach a method of making a superconducting wire by covering the raw material powder of an oxide superconductor/Bi2223 with a metal and heat treating the wire in a pressurized atmosphere and the total pressure of the pressurized vessel is at least 0.5 MPa and less than 20 MPa <Claims 1, 4, 7-11, 15, and 19> [Abstract; 0019, 0048, Ex-12-13].

The prior art is silent about the density of the resultant product per the claims 1-3, 4-6 and 11-13; and fails to teach the reduction in thickness per claims 1, 4 and 11.

Ref to claims 1-3, 4-6, 11-14, 16-18 and 20-22, the prior art wire, components processed, and method of making the wire are either same or substantially same as that

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claimed by the applicants, and Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. <MPEP 2112.01[R3]-I>. Ref decrease in thickness of the wire upon pressurized heating in claims, the prior art process, components processed and the product formed are similar to that taught by the applicants, and the instant claimed reduction in thickness would be obvious as disclosed by Kobayashi et al [WO/US Fig-9A; 0110-0113] that shows a reduction in thickness of the wire under similar conditions.

Further, Ref to process limitations in claims 1 and 4, the prior art product is similar to that produced by the process step claimed by the applicants, and When the reference teaches a product that appears to be the same as, or an obvious variant of, the product set forth in a product-by-process claim although produced by a different process, the claim is not patentable. See also MPEP §2113.

Ref to Pressure in claims 1, 4, 11, 15 and 19, the prior art pressure lies inside/overlaps with the instant claimed range and prima facie obvious.

Ref to claims 7-10, the prior art teaches sintering the BSCCO precursor filled silver tube.

Response to Applicants Arguments

Applicants arguments filed 08/28/2009 have been fully considered but fail to overcome the reference of Li for the following reasons:

In response to the argument that Li fails to teach the sintering density of at least 93% obtained by the specific process step, and teaches away from densification upon heat treatment over the reference of Jiang (Res, Pg-7-8), and increases in thickness upon heating, Li teaches a precursor fill factor of at least 90% theoretical, and a density greater than 90% theoretical, that is free of pores and voids (See Rejection-1 above and Cl-5, Ln 1-4) whereby the prior art article is substantially similar to that claimed by the applicants, and this has been addressed in detail in the obvious ness rejection-1. In response to the argument that Li teaches heat treatment at 1-atmosphere or lower (Res, Pg-8, Para 3-4),

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those cited sections relate to texturing conditions, and Li clearly teaches using a pressure of 2-25 MPa while HIPing in presence of gaseous atmosphere (See rejection-1; Also see Cl 15-16, Ex 2-4, 3-5, 4-2; Cl-11, Ln 17-20) that obviously meets the limitation of pressurized atmosphere in the claims, and the A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments. <MPEP 2144.01>. Applicants fail to show that their product produced by the instant claimed process steps is materially and patentably different than the prior art product.

For the reasons set forth above, applicants fail to patentably distinguish their process and device/wire over the prior art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **KALLAMBELLA VIJAYAKUMAR** whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/

Feb17, 2010.

/Stanley Silverman/

Supervisory Patent Examiner, Art Unit 1793